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Medical Jurisprudence

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An

Essay

on
Medical Jurisprudence

By
James Webster, Esq.

of Philadelphia.

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Medical Jurisprudence

In glancing over the various subjects which present themselves, none appear more eminently calculated for an inaugural dissertation than the subject of Medical Jurisprudence. Until within the last few years, this important branch of medical science, seemed to be almost entirely neglected in this country. But of late it has assumed a more important aspect, and is now held as an indispensable part of medical education in some of our Colleges.

In our observations, must necessarily be very limited in our inaugural Essay, we shall confine ourselves to the consideration of some of the more important subjects which come under the observation of medical men, relative to the destruction of human life.

They will be treated of in the following order, viz. —

1. Phenomena of death. 2. Poisoning. 3. Infanticide & Homicide.

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Previously to entering upon the immediate subject of this essay, as the subject is an important one, and so intimately connected with our succeeding remarks, we shall enumerate in a succinct manner the signs of death.* In forming our opinion we must first take into consideration the circumstances of the case, and in some instances these will be sufficient to determine the question; on the other hand, they may be the very means which will throw obscurity and uncertainty upon the subject, and cause us to hesitate before we decide.

That there are states of the living system so nearly resembling death, as for a time to deceive the friends, and even the medical attendants, is well known; it is now our intention to inquire into the means of distinguishing between these different states. — On first beholding a dead body, we are generally struck with the peculiar hypsospic appearance, or cadaverous appearance, which is presented to our view, denominated *the species Hippocristalis*; this peculiar appearance has also been observed during life, when dissolution is approaching, therefore of itself it cannot

* An interesting paper on this subject, by Dr. Broussais of New York, will be found in the Am. Med. Recorder vol. 5, p. 39.

be of great importance, but in connexion with other signs it is most undoubtedly deserving of attention. The most certain signs, when found to exist together, are an absence of respiration; stoppage of the circulation; rigidity of the limbs; flaccidity of the cornea;* a film formed over the eyes; loss of motion in the eye-lids; flatness of the buccae;† relaxation of the sphincters; coldness and insensibility; of the body.

Various means have been proposed to be employed in cases of a doubtful nature, to ascertain if death has actually taken place. Among others, cupping has been recommended, and if blood flows from the capillaries, it is extremely probable that life is not entirely extinct; powerful stimuli are to be blown into the nostrils, in order if possible to excite sneezing; the introduction of a sharp pointed instrument under the finger-nails, will often prove painful from the most alarming spasm, and has therefore been recommended in cases of apparent death;‡ incisions with the knife; fowling with boiling water or oil; but, which, certainly, may all be of service. Nothing need be said of Galvanism, or Electricity, as their effects on dead animals are well known.

* Swater on the animal & cornea. ° Watson's translation of Blumenbach.

† Buccal set on the signs of death. Ann. Med. Recorder.

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The last and certainly the most conclusive evidence of death, is putrefaction. "But it is a nice point to determine the presence of putrefaction than is commonly supposed," and the opinion of a physician may be called for, when from the smell, it is supposed to have commenced, which may be owing to a decomposition of the alimentary matters; or, from the appearance of purple spots on the surface, which are not infrequently the consequence of disease; hence it appears that un-
-less putrefaction has already affected the solid parts, "it is safer to judge from the concurrence of signs enumerated above than to trust to the appearance of putrefaction alone."

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By this term we understand the destruction of the embryo, by producing abortion during the early months of pregnancy. Women are very subject to miscarriages, and, in many instances the greatest care and attention are required in order to prevent an occurrence, which not unfrequently jeopardises the life of the mother, and renders her exceedingly liable to it in succeeding pregnancies.

It is, however, to the subject of criminal abortion that our remarks will chiefly refer. The circumstances which ^{too} give form to the commission of this crime, are various, but in the greatest majority of cases, it has been for the purpose of avoiding the disgraceful consequences of illicit intercourse, and consequently it is generally in these cases, that the physician is called upon to give his testimony. His first object must be to ascertain if the woman has had an abortion, and, except it be in the early months of life, it will be difficult and perhaps impossible to ascertain, nearly the same appearances will be presented as at the termination of pregnancy; of course they will not be so distinct as those caused by the delivery of a mature child. Should several days have elapsed, the probability is that the parts will be so nearly restored to their natural appearances that our examination will lead us to no satisfactory conclusion.

It may be, as is not unfrequently the case, where violent, postures have been resorted to, that the death of the woman is the consequence, and as these may be persons charged with having aided in procuring it by improper means, an examination post mortem, will have to decide. If the pregnancy be several months advanced, and an examination be made immediately after the death of the woman, in conformity with the other circumstances of the case, the appearances presented on dissection, might be important. The uterus is enlarged and thickened, its capacity greatly increased; its blood vessels are enlarged; the part from whence the placenta was detached, is rough; the cervix uteri is relaxed; the vagina is dilated; the ligaments uterini are relaxed; the ligaments lata are nearly effaced, and if the examination is made immediately after death, it is probable that the scum sinatus may still remain considerably enlarged. Some of these appearances may be produced by various causes; and as they sometimes induce some of the usual symptoms of pregnancy, without the occurrence of any, may also give the appearance of miscarriage; the relaxation may be the consequence of flooding, & of the coagulatio.

^b B. O. Boerhaave, *hypotestis in Infanticide*, p. 37. and *Præles Toxicæ Medicinæ*, p. 161.

^c Hutchison on Schiava, *London Medical & Physique Journal*, Oct. 1751, p. 13.

^d *Præles Toxicæ Medicinæ*, p. 298. — *Præles Toxicæ Medicinæ*, p. 162.

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nothing more to say, that they may exist where impregnation has never taken place, we think there can be no doubt.

The destruction of the fetus may be accomplished 1st by direct means, as the introduction of instruments into the uterus, & the pressure on the abdomen - 2^d by indirect, or such means as act through the medium of the mother, as medicines taken internally, & caustics &c. The former of these modes is now very seldom employed, but the latter is still generally resorted to for criminal purposes. This includes the doctrie, purgatives, electricity, salivation, violent emetics and frequent bleedings, especially in the feet; cases are recorded where after having been bled by a practitioner, the woman on his departure, has removed the dressings in order to encourage haemorrhage for this purpose.* Leeches are used, amongst which also most commonly employed for this purpose are the leeches of India - the haemorrhoids and the Hellebore ligament. The doctrie, which has lately been introduced into doctrie practice, seems to exert a specific action on the uterus, and is said by some to be frequently by fetus to the child, this however, is denied by others. - Still, however, we are sure that any of these means will produce the required effect, perhaps never,

* Smith, *Medical Jurisprudence*, p. 386. * *Medical Jurisprudence* in the *Medical Jurisprudence* &c.
Phys. Journal, vol. 1, p. 266. and 5th ed. *American Medical Journal*, vol. 1, p. 144.

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and is used to an extent dangerous to the mother, except indeed, there exists a constitutional predisposition to abortion.*

The causes of abortion may be properly natural and the discriminating practitioner will always bear them in mind in cases of importance. Early co-existing pre-disposition to it in the female, great mental emotion; violent exercise; blows on the abdomen; accidental falls; frequent vomiting; drastic purgatives; diseases of the uterus; excessive coitus; previous abortion; death of the fetus; too great indulgence in the use of spirituous liquors; fluor albus; attachment of the placenta over the os uteri; haemorrhage, from whatever source or at any period; and what is but too common in fashionable life, extreme profusion on the abdomen. These, with many more may induce abortion, without the least degree of criminality being attached to the female.

In order to avoid any uncertainty that might otherwise exist respecting the map displayed, a short account of the progressive development of the fetus in utero, may not be unnecessary, but perhaps useful. We say, nothing of it at a very early period, as microscopic dissections are not considered valid in forensic inquiries, but commence at the time when we conceive ourselves can

* Beck's Gynaecology, p. 44.

* Burns on Abortion, and Beck on Gynaecology, p. 44.

† Hutchins and Gray on Gynaecology, p. 4.

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be first proved. At about the forty fifth day, the form and parts form which the
 structures are to arise may be discerned, its length is then about two lines; at
 sixty days, it is more perfect and two inches in length; at three months still more
 perfect, and in fourteen or fifteen weeks, according to the observations of Christoph
 (Chomper), all the external parts, except the hair and nails, are found perfect. At
 this progressively becomes perfected, and after the end of the fourth month, when
 quickening takes place, can there be any difficulty in distinguishing it. From
 the fifth to the seventh month, the fetus may be born living, but cannot maintain
 existence, hence, it is immature; after the seventh month, however, it is completely
 formed in every respect except size and weight; is capable of being rescued and
 cannot therefore be considered under the head of abortion, but as premature, and
 to be treated of in the next chapter.

In some of the earliest nations of antiquity, abortion was not only
 tolerated as a private act, but indirectly sanctioned by the laws. According to
 those of Lycurgus, it was permitted with a view to preserve the number of
 citizens equal to the number of lots of ground. During the reign of the Persians, and
 until the time of Alexander, this practice prevailed to a considerable extent
 in ancient Rome. In some countries, we find in many parts of the world, that

* Huetism on Infanticide. p. 4. Hæ. p. 91.

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that this crime is not yet abolished; but it is to be hoped that in proportion as Christianity, which has already planted the standard of peace in some of the most savage nations of the world, spreads its enlightening and benign influence over mankind, will crimes so atrocious in their nature, so baneful in their effects, and so revolting to humanity cease to be recorded by the pen of the historian.

According to the laws of most civilized nations, the degree of punishment varies according to the time at which abortion is procured; it being considered a crime of greater enormity, if committed after, than before the period of quickening; expecting the propriety of such a distinction we are not aware that it is founded in error; and likely to have a very mischievous tendency that the embryo from the very earliest period is endued with life, requires as equivalent to pain; and is the opinion entertained by some of the most enlightened medical philosophers of the present age.

Before the time of Henry the Second, the punishment inflicted in France on persons convicted of having procured abortion, was death. In 1791, the new penal code punished it with twenty years imprisonment in some; the law for 1808 punished it with imprisonment. The laws of Germany and Prussia³ punish it with from two to six years, if procured during the first thirty weeks, and from eight

³ *Nicholson on Felonies*, p. 96.

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to ten, if during the last month. By the laws of England, if any person or persons wilfully and maliciously intending the destruction of the fetus and consequently abortion, the woman not being or not proved to be quick with child, the same shall be declared guilty of felony and liable to transportation for a term not exceeding fourteen years—but should she become so employed after the period of quickening, the person so offending, the aiders and abettors shall be declared a guilty of felony and punished with death accordingly.*

In the laws of this State, if any distinction made, with respect to punishment, as to the period at which abortion may be procured. "If any person or persons shall counsel, advise or direct a woman to kill the child she goes with, and after she is delivered of such child, she kills it, every such person so advising or directing, shall be deemed accessory to such murder and shall have the same punishment as the principal shall have." †

* Clitt's Criminal Law—

† Laws of Pennsylvania. Vol. 4. Chap. 226. p. 112.

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As it was stated in the last section the child of seven months may be seized, so the extraction of it after this period, is considered to be a sign of the same country, if it was born at the full time. But it is now perfect, except in size and weight, then may enable us to form a tolerably correct opinion respecting its age. The weight of a child at seven months should be at least five pounds, and according to Smith, not less than fifteen inches in length, but according to Blaupier, about fourteen. There are also some other peculiarities, as the head being unproportionally large; the bones are soft and yielding; the eyes are nearly closed; the fontanelles are very wide and open; the superficial vessels are large with blood, giving an appearance of great vascularity to its whole surface. The membrana pupillaris does not entirely disappear, and the iris is not yet perfectly formed. In the female, the uterus is very large, and the internal parts are protuberant; in the male, at the end of the seventh month, the testes are not found in the scrotum.

On dissection, we find the liver disproportionately large, and filling a considerable part of the abdominal cavity; the fluid in the per-

* Smith's Principles of Medical Medicine, p. 312.

° Dictionnaire des Sciences Medicales. Art. Abortement. Tom. 2. p. 487.

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Bladder of any texture, is watery and transparent; the heart is also very large, and the lungs are in a state of collapse very small and hard.*

According to the scale of advancement given by Rhiper-Claypin, the middle of the body of a mature child corresponds exactly with the umbilicus; it is two or three centimeters higher at the eighth month; still higher at the ninth month, and at the sixth month, it is exactly at the abdominal extremity of the sternum.

The object of a professional man when called upon to give his evidence in a case of alleged infanticide will be, after having first an actual delivery on the mother, to establish the fact relative to the child, first having been born alive, and if not, what were the causes of its death. The death of a child may take place several weeks before birth and still it may be carried to the usual period; under these circumstances, it is exposed to the action of the liquor amnii, which will cause the placenta to separate, and render the body flaccid; there are also bloody effusions in the large arteries. We can in these cases generally determine with accuracy, but when the child is recently dead, it is sometimes a nice and very difficult matter to decide.

In a child born dead, or when suspicion has not taken place, the lungs

* *Spunk's Forensic Medicine*, p. 312. * *Ibid.*, p. 315.

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will be found of a dark brown colour; solid and contracted, occupying but a very small space within the cavity of the thorax. Upon taking them out of the body and putting them in water, they sink; and when cut into with a knife, the same sensation is conveyed to the finger, as if cutting thro' a solid piece of flesh; no air is emitted; no blood flows out; so there any exspiration; the ductus venosus and ductus arterialis are full and contain blood; the diaphragm is drawn upwards and greatly arched. On the contrary when the child is born alive, the appearances presented are exactly the reverse of those enumerated. The moment respiration commences, the colour of the lungs is changed to a bright florid red; they become light and spongy, and in proportion to the length of time that respiration has continued so are they expanded, and when completely inflated, they entirely fill the cavity and cover the pericardium. When put into water (It must be borne in mind that the temperature of the water should be the same as the ^{temp} surrounding atmosphere. It should also be perfectly free from salt, for when this is contained in it, its specific gravity being increased,) they are so light as to swim on its surface; nothing but a very peculiar sensation is perceived, the air rushing from the cells, causes a very peculiar expiratory sound, and a small quantity of bloody fluid will follow the incision; the ductus venosus and ductus arterialis will be found to contain no blood, and the diaphragm, on account of the pressure of the inflated lungs, will not be so convex and arched.

* Book on Perforation.

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It has been asserted by some very eminent physiologists, that the test by the lungs, is uncertain, and not to be depended on. It will be impossible in the short space allotted to the subject in this Essay, to enter into a full discussion of this important and interesting subject; my observations must therefore, be very general. The objections which have been urged against the Hydrostatic test in cases of the puerperae, may be summed up in a few lines, as much credit may be attached to these objections, as the reader may conceive they merit.

1. It has been asserted that a child may breathe whilst yet in the uterus, and still, not be born alive; if such has been the case, the lungs will be inflated & buoyant.
2. One lung has been observed to sink in water whilst the other floated.
3. The lungs of children born alive, and who have expired, it has been said, have sometimes sunk in water.
4. After the parturient process has continued, sufficient air will be evolved to cause the lungs to float.
5. The lungs of still-born children, may be partially inflated by artificial means, as blowing air into the mouth and nostrils.
6. The child may be born alive and respiration not commence for some time, in this state the child may exist.

With regard to the first objection, granting that a child may breathe whilst in the uterus, when its mouth prevails at the dilated

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orific of that organ, and the vagina admits a free passage of air to it; it is perhaps the only case in which a child can possibly breathe whilst contained in the uterus—a presentation of the face, as it is very rare,^{*} is also very difficult to manage, and hence professional aid is generally required, so that under the circumstances a charge cannot be brought, as it must be evident the crime could not be committed secretly.[†]

The child may breathe after the head has passed the os uteri, and whilst it is in the vagina or sitting on the perineum; Dr Smith mentions an instance which came under his own observation, where he had every reason to believe that such was the case. That a child should die before birth under either of these circumstances seems strange, for the fact of its having breathed spontaneously, would seem to indicate that it was possessed of universal strength and vigour; and if profuse in the road be alleged as the cause of death, it would be inconsistent, for "it is wholly inconsistent whether the circulation is still stopped, or not after respiration has commenced, as the fetal circulation has then become unnecessary."[‡]

To the second objection, we reply, that from the researches of M. Pons,

^{*} In the report of L'Hospice de la Maternité, at Paris from 1797 to 1806 in Bonas' Bureau.

[†] Smith's Forensic Medicine, p. 324. [‡] Beck on Asphyxia, p. 57.

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satisfactorily, nor duty will be to decline any positive deduction, and leave justice to satisfy herself in some other manner.*

As respects the fourth objection, accurate observations have proved that the lungs, which are the last parts of the body to become putrid, while they have not respired, will often float on the surface of water, after putrefaction has commenced, and so long as their organization is not completely destroyed by it, but when this is the case, that they will sink. It is evident that some difficulty will exist, in these cases, as most help rules have been laid down by the jealousy of writers or legal technicians for distinguishing between the air of respiration and that which is emphysematous. — As the air consequent on putrefaction is situated under the extreme membrane of the lungs in bubbles, by squeezing them hard, these bubbles will burst and the lungs of consequence will sink in water.* The air bubbles of respiration are so small as hardly to be perceived by the naked eye, whilst those of emphysema are large and seen in lines between the component lobules of the lungs.† Lungs which have respired, although putrid, always have a crepitus on being cut into, whilst those which have not respired, although they float, do not possess this peculiarity.‡

* Smith's Toxicæ Medicine, p. 329. † Hunter on the Uncertainty of the Signs of Murder &c. Med. & Phys. Observations, Vol. 2, p. 284. ‡ Mass' Manual, and Ricci's Disposition, p. 57.

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Respecting the fifth objection, there can be no doubt that the lungs may be artificially inflated; it may be the last act of maternal kindness and compassion to preserve a life, which of course must inevitably bring shame and disgrace upon her, and which in the fulcrys of her heart she has rather suffer than see her infant perish without an attempt to save it. She may have known the ^{probability} of some vile seducer; and on these circumstances, when she discovers that the child is really dead, what good end could it answer to make it known? Total moral principle requires her to divulge her secret? She resolves to conceal her shame, and perhaps for the future to lead a virtuous life; it may be discovered, and the means she uses only to conceal her shame, will be considered proofs of her guilt.

Amuse then that the lungs may be artificially inflated, various tests have been proposed by writers on this subject, amongst which, those of Brouncker and Boerhaave are deserving of most attention. The former knowing that the blood does not pass thro' the lungs until after expiration had commenced, concluded that in a child born dead, the arteries and veins of the lungs are found destitute of blood, and in a collapsed state, notwithstanding any artificial inflation that may have been practiced upon them. On the contrary, the particular distention of the pulmonary organs, proves that the child has breathed for nothing but natural respiration can produce this effect.*

* Boerhaave's Inaugural Dissertation. p. 56.

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The absolute weight of the lungs is not increased by the introduction of air after death, whereas, when respiration has taken place and it is not the case, and hence the test of Phlegnet is highly important. It is said that the air introduced artificially, may be squeezed out of the lungs, upon which they sink in water: observe if there is any exspiration, or blood when the lungs are cut into. The external conformation cannot assist us in our inquiry.

It would seem that instances have occurred where the circulation has continued in infants who had ceased respired. Three cases are recorded by Boerhaave where infants had been deeply buried in the earth, and taken out alive after several hours; two cases are related by Morisberg* where one infant lived seven the other nine minutes, enclosed in their membranes, when he respired them.

Phlegnet founded his celebrated test upon the principle, that as the fetal lungs contained very little blood, the vascularity, and consequently the real weight of lungs which had respired, must be considerably increased. From his observations therefore, he was induced to lay it down as a general rule, that the relative weight of the lungs of a full-born child, to its whole body, is as *one* to *seventy*; and those of a child which had respired as *two* to *seventy*; thus by the introduction of the blood

* Hydrolinson's Essay on Infanticide. p. 356.

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into the pulmonary organs after the respiratory process has commenced, we find their absolute weight is doubled.—

This test has also had its objections.—The child may die from hæmorrhage, and it has been said that the loss of blood would alter the ratio. In such a case it is said that the lungs would bear a greater proportion to weight.* It must be very evident that a congestion of the fetal lungs cannot take place to any extent, the blood must necessarily pass thro' the natural apertures the ductus arteriosus and ductus venosus, hence, this objection cannot hold good. Should there be any disease of the lungs, scirrhus, dropsy, &c, they will necessarily be increased, and as they serve to increase the weight, of course this test will not be applicable in such cases; these observations will also apply to putrefaction.—Respecting the tests of Professor Brouncker nothing, ^{more} he said, as they are not considered by writers on Medical Jurisprudence, to be entitled to much confidence.—

It has been customary with the most approved writers on Judicial Medicine, to class the means by which the death of the child may have been caused, under the heads of Asphyxia and Commissio.—In the first class are included cases where the umbilical cord has been divided without the precaution of tying it having been taken.—Instances are on record, where

* Smith's Principles of Forensic Medicine, p. 341.—

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it has been divided without this precaution, and as teps of blood has ensued, but it is the generally received opinion in the medical profession, that great danger must result from such neglect. — 2^d The clita may have been left exposed to the influence of cold, and thus perist. "The signs of a clita having perished in this manner are a determination of the blood from the superficies of the body towards the interior, leaving paleness of the skin and vacuity in the vessels of the surface." 3^d Neglecting to give the amplexus proper for its support. It shall be thus occasionally, (which must be very rare) "The disposition of the body would ascertain the fact of its having been perished or not, at least for some time before its death." 4th The woman may be so situated during labor, that when the head is delivered, the face of the clita rests upon the bed clothes and respiration being prevented, it may in this manner be suffocated; it may be drowned in the uterine discharge,* or strangled by the umbilical cord, when of an unusual length.°

In the second class, or under the head of hemorrhage, we shall mention the manner in which a clita is generally put to death after birth. It may be effected by the various means which will come under consid.

* Hunter on the uncertainty of the signs of murder in the case of Ballard Child near Medt. Obs. & Inq. p. 298. ° Paris Midwifery, edited by Prof. Roux. p. 183.

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operation in the section on Homicide, but the peculiar means and those which cannot be employed upon adults, are first, tying the umbilical cord prematurely, whilst the fetal circulation still exists, and before the child has expired, which is indicated by its crying; this, however, generally takes place so soon, that we are not to suppose a ligature will be often fixed with such fatal promptitude - nor indeed in ordinary cases does accomplish what it might be intended.

Secondly. The death of a child may be effected by passing a long sharp instrument, as a needle or piercing wire into the brain through the fontanelles, or by thrusting it into other parts of the body; this, together with wounds, bruising and almost any sort of violence may soon be detected by a minute examination. Should the child have been suffocated, no matter by what means the pulmonary congestion will be evident; and where it has been removed with speed or haste, particles may in all probability be found in the mouth and nostrils.

There is another circumstance which may come under the observation of the Physician in a criminal Court. The child having been found it may be desirable to know the length of time that it lived. The cord is separated from the navel about the fifth day, but it is in general slightly detached on the fourth; at about the seventh day the surface from whence it is detached, heals up. - After a later period, if it should be desirable to

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know how long the child has been dead, our means of determining will depend in the extent of putrefaction.

In making up his opinion in a case of such deep interest, the Physician should avoid falling into the errors of popular prejudice; he should pursue his examination with the greatest care and attention, carefully noting every appearance; he must bear in mind that upon his testimony alone, may depend the life of a fellow creature. The circumstantial evidence is as much as it is not necessarily connected with his testimony, must be kept out of view, and finally, his opinion the result of deliberation and knowledge, must be advanced in as delicate and precise a manner as possible, at the same time that he carefully observes not to enter into any thing like argument or requisition.

The punishment inflicted on those found guilty of infanticide, in almost every civilization, from the most remote period, has been very severe. Previous to the year 1803 the law of England punished with death any woman who was convicted of having concealed the birth of her bastard child, except she could prove by one witness at least, that the child whose death was by her is intended to be concealed, was born dead.* After this period, however, it was enacted "that women tried for the murder

* East's Crown Law, p. 299, as quoted by Dr. Beck.

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of bastards children are to be tried by the same rules of evidence and presumption, as by law are allowed to take place in other trials for murders of any kind, and it shall appear, nevertheless that the prisoner was believed of a child, which by law would, if born alive, be bastard, and that he died by secret burying, or otherwise, and accounts to conceal the birth thereof, thereupon it shall be lawful for such court, before which such prisoner shall have been tried, to adjudge that such person shall be committed to the common goal, or house of correction for any time not exceeding two years.*

In France, until the year 1791. every woman convicted of having concealed her pregnancy, and put to death a bastard child was condemned to death.† In the new code however, for 1810. we find the punishment is changed to imprisonment.

Until the year 1790. concealment of the death of a child was punished in this state as a capital crime, at which time it was altered, not being considered sufficient evidence to convict the party, without probable presumptive proof that the child was born alive. The

* Blackstones Commentaries. vol. IV. p. 198.

† Beck's Digestation on Infanticide. p. 87.

† Translation of the code of Napoleon, for 1810.

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act of 1794 declares, however, that "the concealment of the death of the child shall not be considered conclusive evidence to convict the party of committing the murder of her child, unless the circumstances attending it be such as shall satisfy the minds of the jury, that she did wilfully and maliciously destroy and take away the life of such child." "Concealment is punished with imprisonment at hard labor, providing, that if the grand jury shall, in the same indictment, charge any woman with the murder of her husband or child, as well as with the offence of concealing its death, the jury, by whom such woman shall be tried, may either acquit or convict her of both offences, or find her guilty of one and acquit her of the other, as the case may be."^{*}

* See to the Laws of Pennsylvania. Vol. 1. p. 114.

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Homicide.

By the term homicide we understand the destruction of human being by violent means. And must as it may be, more or less criminal according to circumstances, it will be necessary to mention the various kinds to each of which, a different degree of punishment is attached.

1st Culpable Homicide, where the life of a person may be destroyed without the best intention, altho it may have been put in jeopardy, as for instance by firing a gun with the intention of puffing, or from not knowing that it was loaded.

2nd Manslaughter; the killing of a person without any malicious intentions, when death is thus occasioned, it is in fact little more than a mere accident.

3rd Feligious Homicide, where a person is killed by another without such being his intention, but where he has designed to take away the life of an individual against whom he has borne some maliginity; thus mistaking one of whom he entertains an unpleasant feeling, or of whom he perhaps has an advantage, for the person that he had intended to destroy. In cases like this, the offender is considered equally guilty of murder as if it had been the person against whom he had conceived such a wicked design, and he will be punished accordingly.

4th Murder: This is a crime of the greatest enormity. It is the wilfully and intentionally killing of a human being. There is also another species of Homicide, where if a person is attacked, he may be forced in self defence, to kill another; & this, however, as

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punishment can be attached, it is called Capital Crimes -

The means which are generally employed for the accomplishment of these crimes are various, they come under consideration in this section and will be treated of in the following order viz Strokes and Blows, Asphyxiation and Poisons -

Wounds and Bruises

It is not to be supposed that we shall enter into a minute detail of the subjects now under consideration. So much as they are the means by which violent death is commonly effected, they will consequently, come frequently under the consideration of the surgeon. Supposing then a dead body to be found with wounds or bruises the first object must be to ascertain if they were inflicted during the life of the person, and for this purpose, if the wound be deep, we must look for traces of blood*; if it has penetrated any of the large arteries, internal hemorrhage will in-

* In 187, Sir D. Bailey was first strangled, & bruised in the breast by four men, he was saved by being thrown head & then thrown into a ditch. On the body being found, the end of the sword penetrated his breast & he lay on the back; no blood could be found near the spot, nor was there any effusion of blood when drawn out. "The breast was discoloured & bruised, and the sword was so fixed that the chest could be turned from one shoulder to the other. His face during life had been somewhat pale; but after death it became much suffused."*

* Baile's Forensic Medicine, p. 228.

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from us, on the contrary, when such appearances are presented, we must suppose the person to have been strangled in some other way.

With regard to bruises it has been said that similar appearances are sometimes presented in the skin after death, & are commonly caused by bruises inflicted whilst the person lived. The former of these appearances has been called the *ecchymosis*, and is an effusion of blood into the cellular substance, from petechiation; it is very sometimes to be found rising up generally in the most depending parts of the body, where it may be caused by disease or by pressure. The latter *ecchymosis* can be produced in the living body only, and is also an effusion of blood into the cellular substance; it is soft, prominent, and of a dark colour. According to Forester and others, upon making an incision into a *teggillation*, the blood will be found fluid; and on cutting into an *ecchymosis*, "a congestion of thick concrete blood will be found."²

The most object will be to ascertain whether the injury found on the body was the cause of death, or not. There are some wounds which are necessarily fatal, as where any of the large blood-vessels have been divided; where the injury has been very extensive; or where any important organ is concerned. There are others, however, which are only fatal from peculiar circumstances. Thus to some it is necessary of constitution, a wound may be fatal to one person, which by another would scarcely be noticed; or even to the same person under different circumstances. The consequence of a wound of the brain, inflicted on a person in full health, would perhaps be fatal.

² See the Forensic Medicine, p. 242.

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Let the same infliction during the enjoyment of battle would create little or no inconsistency, hence, the necessity of extreme caution in our decisions.

The law formerly held an man liable for the consequences, a year and a day, any person who had inflicted violence upon another: And a law was eventually founded on incorrect principles. That a person may die immediately on receiving a blow from other cause, whilst a person may live for years, and still die from the injury he may have received at a very remote period, there can be no doubt. The law however now requires the intent, and where there has been any bodily assault to kill, or to cause grievous bodily harm, the crime is made out although the design may have failed. An instance is related by B. Little where by the testimony of the medical Profession the complexion of the case was considerably changed. A boy was struck on the head with a stick and his skull fractured, by a man, on whose grounds he was committing depredations; on trial it was not only proved that the boy was not guilty of the provocation, and that he was intended no more than chastisement, but that the stick was not of a size from which such mischief could have been anticipated; and moreover, that the skull was thinner than ordinary.

The third object must be to ascertain if possible, whether the person came to his death by his own hands or by the hands of others. For this purpose we must notice the situation of the deceased; what sort of weapon was made

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are of, and whether it be found, or not; the part of the body, where the wound was inflicted. We must also inquire into the circumstances of the case, the state of his mind for some time previous; his general conduct &c; by these means, we may sometimes be enabled to decide, and perhaps thus secure an innocent person from suspicion. On the other hand, a great secret is sometimes practised, for instance, in a man was found shot, and his own pistol discovered lying near him, from which circumstance (and as a person having been seen to enter or leave the house of the deceased, it was concluded he had destroyed himself; but on examination, the ball by which he had been killed, was found to be too large ever to have entered that pistol; in consequence of which discovery, suspicion fell upon the murderers.*

In quarrelling, a kick over the region of the stomach is a very frequent occurrence, and not infrequently causes immediate death, this is probably owing to the shock occasioned by the right pair of nerves and the great sympathetic being suddenly conveyed to the organs of respiration which are thereby prevented from performing their natural functions. From external violence the lungs are often ruptured, the intestines, liver &c. may be ruptured and death the consequence. A case is mentioned by St. Asch, where from a violent action alone, in attempting to swim falling from a horse, the liver was ruptured; and a case is recorded by St. Asch, where the right kidney was torn in two transversely, by a kick from a horse.

* *Medical Juridical Medicine*, p. 126.

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from, furnished but twenty minutes. It will be important to ascertain that where death is supposed to have been caused by external violence, that cases are no second alone without any such means, the persons may have died suddenly from some internal disease, which can only be discovered on dissection. The following is a case of this kind which is taken from *Smith's Principles of Medicine*. In the course of a carduostomitis between a man and his wife, the woman died, and a shommon was raised that the husband had murdered her. On suggestion being made, a verdict was returned against him, and he stood upon his trial at the following assizes. He was there acquitted; for evidence was given that he had not touched his wife during the quarrel. He was said to be a person of an extremely violent temper; and on opening her body, it was found that she had been labouring under supposition of the kind, and that an abscess had burst into the cavity of the abdomen, through the agitation into which she had been thrown.

I do not conceive it necessary to enter into an account of some of the treatment &c. This cannot be expected in a short essay on *Forensic Medicine*, but must be referred to in the province of surgery. It should be particularly remembered that where a woman has been of long standing, and the patient has finally sunk under it, the surgeon will perhaps be liable to be very minutely questioned respecting the mode of treatment pursued in the case, and if it be found that the patient died from improper treatment, or neglect on his part, it will certainly result to his discredit in a court of justice, at the same time the prisoner must be

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acquired. Care and attention, therefore, will be particularly required to the plan of treatment, as it seems to be too rigidly enforced in cases of the nature, upon which perhaps the expectation of a cure may depend.

Asphyxiation

Under this head, we think may with propriety be classed all the cases, or means by which death is caused from an interruption of respiration. It is well known that an interruption of this process for a short time only, will cause death. Whether it be produced by mechanical means, by exposure to noxious gases or by submersion under water, whatever of these may be the cause, the effect is the same; the circulation of the blood is impeded; it becomes accumulated in the right side of the heart, the cavities of which, on deposition, will be found filled with dark coloured blood; the vessels of the lungs become filled and turgid, giving the peculiar dark blue colour previously on dissection, they may perhaps become filled, when effusion will take place; from their proximity to the heart, those of the brain also become filled, and perhaps in this manner that important organ, hence also, the appearance of great discoloration and lividity about the head, breast, and superior extremities of persons who have died from these causes. The most frequent means by which asphyxiation is effected, are by strangling and drowning, but there are others which are not so frequent occurrences, as strangling, and suffocation,

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and obvious indications, each of which will be separately considered in this section.

Hanging

When a body is found suspended by the neck, by means of a rope, or any other ligature, it is probable that a physician will be immediately called in, and if the person be dead, it will be his duty, first, to examine if he came to his death from hanging or other means. Together with the appearance of suffocation (before mentioned), the eyes are protruded and their pupils enlarged with blood; the tongue is sometimes protruded out of the mouth and surrounded by the teeth; this, however, can only happen when the rope has pressed under the cricoid cartilage; for when it has pressed above the thyroid, it will on the contrary be pushed back; there is sometimes a discharge of bloody purulent from the mouth, nostrils or ears; the hands are clenched; the shoulders elevated; in some instances, urine, feces or even menses expelled, and when the body has fallen from a height, the transverse ligament of the uterus, which occupies its place, is ruptured, and a laceration of the lower is the consequence. When many or most prominent of these appearances are found, and natural conclusion concludes that the person was alive when hanged. —

It will next be necessary to ascertain whether the person hung himself, or was hung by others. For this purpose the place where the body is found

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must be noticed, also if there be any appearance around the spot indicating that there had been resistance or struggling; inquire into the previous state of mind of the person, his usual character &c; observe if robbery has been committed, the dress and general appearance of the deceased. — If the person has been found hanging in a room, with evident marks of external violence about the body, it is not to be considered as certain that he was murdered, he may have done off with such violence as to break the ligature, consequently, on falling he may have thus injured himself by striking against some of the articles of furniture; and afterwards suspended himself. A case is related by Dr. Trauer where a suicide inflicted several wounds upon his face whilst he was suspended; and others have been known where the person has rebounded himself under similar circumstances.*

The situation of the cord about the neck is also to be taken notice of, and if two distinct marks are found, the lower one most discoloured, we may conclude that the person was first strangled and afterwards suspended. In such a case if the person was shot and hung by others, as much force must have been used, we might consequently expect to find the cervical vertebra dislocated, and if on examination, such injury be

* *Noble's Surgical Medicine*. 2nd Ed. p. 181.

• *Smith's Forensic Medicine*. p. 217.

found, our opinion would be considerably strengthened. In dissection, the same appearances will be presented to us as mentioned under the head of suffocation.

Strangling has seldom been recorded as an act of Homicide, even- though some instances of this kind are related; it is evident that much force and some preparation will be requisite to effect it. It is, however, generally an act of suicide. There have been instances where children have strangled by their playfellows for amusement, not being aware of the consequences; such cases have occurred in this country.

(DROWNING.)

Called to a body in a drowning state, the Physician will first resort to an employment of the means recommended for its restoration. Should he fail, or should it be evident from the appearance of putrefaction, that such means are needless, two questions will immediately suggest themselves, which will require solution.

First, Was the person brought to his death accidentally, or was it his own act, or an act of others? It must be evident that it will in general be a matter of no inconsiderable difficulty to determine on these points. In many instances it will be quite impossible to clear up our doubts; in others,

only by the evidence of persons who witnessed it. When, however, it has been committed on or near the banks of a river, the appearance which may be presented about the spot, will sometimes enable us to the conclusion that the person came to his death by the violent means of others, as when it would seem to indicate that great assistance had been made; marks of potatoes, substances he grasped in the hands of the deceased when the body is found. This is well exemplified in the case of Mr. Taylor, who was murdered at Hensley in December 1818, marks of potatoes, dug in the ground, were discovered near the river, and on taking out the body, the hands were found clenched, and contained grass which he had grasped from the side of the water.*

We shall in some instances, be aided in no small degree, by taking into consideration the state of the present mind, his previous conduct or circumstances. &c.

Secondly. Was the person alive, or first killed and then thrown into the water? To determine these points, we are shall in general be considerably assisted by the external appearance of the body. Should there be any wounds or bruises, we must take into consideration their nature and extent, the parts probably injured by them, and whether it is likely

* South's Forensic Medicine. p. 215.

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they were the cause of the person's death. We should at the same time, only consider whether these wounds or bruises were the effects of criminal intention or of accident, for it will be collected that a person, in falling, or a rider on a horse, may probably strike against some hard substance, and thus cause appearances, in all respects similar to those inflicted with criminal intentions. —

In determining to ascertain the length of time that a body has been in water, the usual criterion for determining this point, in connection with the circumstances of the case, is the degree of putrefaction. Since the experiments of Hall* however, we are enabled to determine this point with much greater precision. He has demonstrated that by continuing a dead water for four or five weeks, the animal fibres will be converted into adipose, a fatty substance known from its resemblance to spermace. The body of a drowned person is always pale except about the face, which may be sufficed; the expression of countenance is wild, and there is a fatty mucus in the mouth and nostrils. No digestion, the usual appearances of suffocation are present, sometimes water is found in the bronchiae, which was supposed by Harvey and others to be the cause of death. As it is evident that water may be introduced into the stomach during drowning, it may have been taken in large

* Philosophical Transactions. part II. for 1796. &c. 5. —

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quantity just before the person was thrown into the water; in either case its presence is not of the least importance.

Respecting the buoyancy of bodies, considerable disparity of opinion prevails. It has been asserted by some, that bodies thrown overboard at sea without weight attached to them, continue to float; by others that they sink. There can, however, be no doubt that a body sinking throws out water, & will sink, & continue so until the buoyant force of the displaced water is sufficient gas to render it specifically lighter than water; after which, it will appear at the surface.

Strangulation

This is a means much more commonly employed for criminal purposes than hanging. The external appearance of a person who has been strangled, differs essentially from one who has been hanged. In the former, the mark of the ligature will generally form a complete horizontal circle of reddish brown stain round the neck. It may be situated in the middle or lower part of the neck, and if so, our opinion can readily be made up.

These are merely put on for the purpose of preserving the body from rotting, and not for sinking them, as has been asserted.

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The same species are applicable here, as in the case of drowning. It can seldom be considered an accidental occurrence, nor can it easily be committed by a person voluntarily, except through accident, as when a person is intoxicated, by falling, he may be so situated with his hands or stretched position on his throat, as to cause sufficient pressure completely to prevent respiration.

There are various means by which it can be accomplished, it may be done by the hands of individuals, as in the case of Sir John B. Peters, who was strangled in this manner; and a few whose neck when examined by the surgeons, were found the marks of nails & fingers. Dr. O'Connell was murdered in 1892, was strangled in a hackney coach by two men while driving about the streets of London. This was effected without the driver knowing anything of it, and who found him dead, with a handkerchief round his neck and a piece of coal in it, which was applied immediately over the trachea, so as to prevent respiration. Should there be wounds or bruises, we must take them into consideration; and if any, observe whether they were inflicted before death, or afterwards in order to prevent suspicion, as in the case of Sir E. Portman mentioned at page 39.

The usual appearances of suffocation will be manifest in these cases on dissection, although perhaps not to so great an extent, for in several instances will probably be required for its performance, as great violence

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these, will, no doubt be made by the individual, so will perspiration and circulation continue in some degree for a greater length of time, when it gradually ceases; whereas, when stopped at once, as in hanging & drowning, the vessels of the brain and lungs, and the right side of the heart will be found engorged with blood, which may perhaps, not be so much the case in strangulation, although at the same time, these appearances will generally be so soft & evident as to leave us little or no room for doubt.

Smothering

of this, but little need be said. It is accomplished by so closing the mouth and nostrils as effectually to prevent the passage of air to the lungs. Children are generally the subjects of this mode of murder; it may be attempted on adults, but we think it will be very rarely, as so much force will necessarily be required for its accomplishment. Children are very liable to be destroyed in this way from accident, as by covering them with bed clothes, pillows &c, thus preventing the access of air to the lungs. In these cases the same appearances will be found on opening the body, as in asphyxia under the head of suffocation. In ascertaining whether it was destroyed with a criminal intent or not, we shall be entirely governed by the circumstances of the case.

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We place them under this head, for it is evident that the circulation of the blood is impeded in the lungs, and consequently, suffocation ensues. The only gaseous substance by means of which the lives of individuals have been destroyed through criminal interference, would appear to be the carbonic acid gas. To kill a person by any other species of gas, would require a process of philosophical preparation and administration totally incompatible with our ideas of a criminal act.*

When a number of persons are confined together in a small room without ventilation, this gas is expelled from their lungs and thus becoming accumulated to a dangerous extent. Instances of this kind are mentioned by Dr. Smith, at the Sumner of Calcutta in 1756. one hundred and forty six English prisoners were put into the "black hole" and remained there from eight o'clock in the evening until the following morning, when it was found that only twenty out of that number remained alive. A similar case occurred in London in 1798. Twenty persons were crammed into the hole in St. Martin's church-house, and during the night several of them died. It was decided by the surgeons who were consulted on the occasion, that when the doors and windows were shut, the place could not support twenty

* Smith's Forensic Medicine. p. 205.

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persons for three hours without danger of their lives". What was the result of the trial which took place at Leeds daily, could not be ascertained.

In making up our opinion in these cases, the circumstances connected with them, will generally enable us to determine at once. Death has not infrequently been caused from accidentally inhaling this gas. We do not conceive this to be a proper place to enter into an examination of the nature, properties &c. of Carbonic acid gas. A knowledge of this, however, will be necessary in a court of justice, and it is to be expected that every professional man will be prepared accordingly. -

There are other species of death from suffocation as doubling back and swallowing the tongue; large tumours about the throat; external pressure in the thorax, as when a person stamps upon the breast of another who is down; blows on the thorax, which paralyze the muscles of respiration and thus produce this effect. In examining dead bodies under any of the ^{above} circumstances particular attention must be paid to the appearances about the organs of respiration; whether there be disease, and if so, whether it could have had any influence in causing the death of the person. An interesting case of suffocation caused by a tumour pressing on the trachea is recorded in the Quarterly Journal of Foreign Medicine and Surgery for October 1822, p. 605. by Alexander Bellingham Esq.

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Poisons

No longer is it necessary for the historian of the present day to record the various means and devices which were resorted to for the destruction of human life, with which the pages of several two centuries ago abound. To enter into an account of the art of poisoning, as practised in France and Italy about that period, would perhaps in this place be useless and unprofitable.* That age of barbarity, superstition and cruelty, as paper away, and even aided by religion and just laws, has enabled mankind to appreciate more highly the beneficence of a wise Creator. Crimes of this nature are hence comparatively seldom occurrences, as the help, as they sometimes occur, and as the opinion of the Physician will greatly influence the decision of a jury, an intimate knowledge of the various poisons, the symptoms they produce when taken into the stomach, their treatment, &c. &c. will be indispensable.

Poisons may be taken accidentally; or intentionally with the part of an individual for the destruction of his own life; or they may be given by others with a criminal intent. Called to a person yet alive, who is

* See Harpach's State Trials. Beaumont's History of Inventions. - Causes célèbres par Bayet de Beauval, and Facchin's Questions Médico-Légales.

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supposed to have taken poison into his stomach, our first object must be to endeavour to remove or mitigate his sufferings, and if possible, to preserve his life. We should be particular in noting every symptom, and at the same time we must endeavour to procure the vessel from which he last swallowed, and if there be anything remaining in it, carefully to preserve it, as also anything which may have been rejected from the stomach. Having procured this, we may be enabled to apply the proper remedial articles from the results obtained, or submitting it to analysis as may best stand, and a corroborative proof as to the particular deleterious article administered, is to be derived from the successful application of an established antidote.

On the other hand, called to examine the body of a person supposed to have been poisoned, we must as above mentioned, endeavour to procure the vessel from which he is supposed to have last swallowed, as also any matter which may have been rejected from the stomach. Nothing, I believe, will be gained from the external appearances, authors have noticed a peculiar lividity of the surface, distorted countenance, and a frothy mucus issuing from the mouth. This latter appearance, however, is commonly found in drowned persons, as also in those who have died suddenly from any other cause. It will be necessary in order for perfect

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examination, that the whole alimentary canal be examined with care, and its contents placed in proper vessels, in order that it may be submitted to various chemical tests. When treating of the particular of the particular poisons, on account of the mode of procuring, symptoms, appearances in digestion, tests &c. will be given. —

There are also several inquiries which should be made, particularly of the person is vitæ alivæ, satisfying answers to which would considerably influence us in forming an opinion as, how the person accustomed to such attacks before, or taking any particular medicine or substance which seemed to disagree with him, owing perhaps to some peculiarity of constitution; and if any, what were they? What was the state of his mind, could his body be killed previously? Was it likely that there was adulteration in any of the articles of cooking employed? Has the person been taking any medicines and if so, what were they? These with others of similar import will readily suggest themselves. —

In entering upon the consideration of the particular poisons our observations must necessarily be much restricted. We shall therefore, only consider those which come most frequently under our consideration, and which are consequently the most important. Regarding classification, it is needless to observe that as our remarks will be very

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general, we shall not take advantage of the excellent arrangement of history as adopted by DeFels, and followed by several other writers on the subject. We shall commence therefore the consideration of 1. Animal Poisons. 2. Vegetable Poisons. 3. Mineral Poisons.—

Animal Poisons.

As regards as to this class of poisons, it will perhaps but say, seldom come within the sphere of Forensic jurisprudence. Indeed we, however, are not wanting when even they have been employed to destroy life. In every instance, the circumstances of the case will be so self-evident, that we shall seldom of ever become to any difficulty in deciding.—

In this class are comprehended poisons which are externally applied, and carried into the circulation, thus producing their injurious effects. They may also produce the same effect from being taken into the stomach. In this country, particularly to the south, persons are not infrequently killed by the bites of serpents as the rattlesnake; it is said to be far more dangerous when taken into the circulation in this way, than when the secretion of the serpent is swallowed,* for this has been taken into the stomach with impunity. But as

*Smith's Toxicology, Medicines, p. 118. See experiments by M. B. in *Figliaroli* in the London Medical Repository, for December, 1815.—

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this is always accidental it can not be considered, however. The stings of various insects, the sometimes occasion death; in like manner the bite of a blood-sucking animal will cause death, the absorption of its saliva into the circulation is so rapid, that unless the bitten part is completely cut out immediately, syphilis will soon show itself. Another of these, however, is likely not to come under your consideration in medico-legal inquiries. Besides poisonous fish, animal matters in a certain state of putrefaction are said by writers to be poisonous.

Cantharides.

The only animal poison upon which it seems proper to dwell particularly, is the Spanish or Blistering fly, known by the names Cantharis, Lytta, and Meloe loricatarius. Taken in scorpions holes, it produces small blistering symptoms, and therefore advantage has been taken of it for medicinal purposes as in the case of Sir Thomas Overbury* who was destroyed by it. Every one is familiar with its effects produced by its application to the skin. From its supposed peculiarity of acting on particular organs, it has been given with the most theatrical design, and in many instances with less success.

Symptoms

The symptoms produced by Cantharides when taken into the stomach is a

* See Medical Remains, p. 55.

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large and suddenly distending. Burning heat in the throat and stomach, full breast, inflammation of the lungs, pleura, stomach and intestines; vomiting, pain in the stomach, hot skin; full, frequent, hard pulse; violent vomiting and retching, with bloody stools; pain and heat in the bladder, with retention, or the urine comes off by drops, bloody, attended with the most severe pain; and the most painful and obstinate priapism. Finally convulsions, delirium, and spasm come on, and death closes the scene.

Treatment.

Vomiting should be excited by mild diluent drinks, as sugar and water, barley-water, rose-water &c., or sweet oil may be taken. For the inflammatory symptoms, the usual depletion measures must be employed, and emollient clysters should be freely administered. Camphor dissolved in oil, may be rubbed over the belly seven or eight times.* Should it have been taken in the form of powder, it may be stirred by its psalter-halter, in the matters discharged.†

* Stowes Symplicological Chart.

† In the Forensic Medicine, p. 116. and Forensic Medicine by Gale.

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Vegetable Poisons.

From the difference of the effects produced by different vegetable poisons, as the system, authors have divided them into two classes. 1. Acute. 2. Chronic.

Acute Poisons

Among these are included a great number, the principal of which only are to be particularized.

Solomoniacum *Butyrosus* — a. *Silene* *Lappace*.

Veratrum *Album* — a. *White Hellebore*.

Halimolobos *Camphoratus* — *Camphor*.

Cucumis *Edocynthicus* — *Bitter Apple*.

Euphorbia *Officinalis* — *Euphorbia*.

Hellebore *Niger* — *Black Hellebore*.

Scorodolus *Stammensis* — *Scammony*.

Sanitum *Apollas* — *Rock Wood*.

Rhus *Toxicodendron* — *Prick Oak*.

Nomordica *Elatium* — *Elatium*.

Sanguis *Sabina* — *Savine*, *Verat*.

Chronic Poisons.

The symptoms produced by this class of vegetable poisons when taken into the stomach, are an acrid, bitter taste, nausea, violent vomiting, discharges from the mouth and fauces, with excruciating thirst; the efforts at vomiting do not cease

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now when the Stomach is emptied of its contents. At first the pulse is strong and frequent, violent purging comes on, and the fever sometimes passes off involuntarily; there is no existing pain at the pit of the Stomach, giving up and delicious; the pulse now becomes weak and irregular; the respiration is laborious, quick, and painful, the pupils are dilated; fainting, with cold sweats ensue, and finally, spitting comes on which, speedily terminates the sufferings of the patient.

Treatment.

With respect to the treatment, our first object will be to invigorate the contents of the Stomach; for this purpose, we must resort to the employment of lactics. Sulphate of Zinc would seem the most proper, but Ferrocucurbita and Tartarized antimony have been highly recommended. This operation should be accompanied and aided by a very powerful exhibition of large quantities of warm beverages, as barley water, mucilaginous drinks &c, at the same time that the fumes are to be taken with a feather. A tobacco catheter should be laid over the Epigastrium. * Stomachic ball with emollient injection must also be employed. Should these means not succeed, we are recommended to endeavour to pump out the contents of the Stomach, it may perhaps be necessary also to clear the stercorary canal of its contents, with this view, we should administer a pretty brisk cathartic. — In order to

* Schegmans M. G. Lectures. —

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alleviate the severe pain in the abdomen, it will be proper to employ fumigations, and local abstraction of blood by cups or leeches.

It not infrequently happens when the stomach has been completely evacuated, that the effects of the poison do not disappear. In such cases we must order the person to stir about - strong coffee or diluted sinapism should be given freely - "Emphoric mixture with ether may be taken frequently, and if immobility be considerable, warmth, friction and blisters may be employed." Should inflammation supervene, we must recur to the antiphlogistic measures.

In the annals of Philosophy for May 1820 p. 380. there is a paper giving an account of several experiments performed by M. Broussier, by which he ascertained that "the fruit of the *Scorilla coriifolia* is a powerful antidote against vegetable poisons." These experiments were performed on dogs. He poisoned several with hemlock, Rhus Toxicodendron, and Bayberry. "All those that were left to the effects of the poison died, but those to whom the fruit of the *Scorilla coriifolia* was administered, recovered completely after a short illness." A poultice of the fruit prevents the ill effects of wounds inflicted by arrows dipped in the juice of vegetable poisons.

Inspection

It is said that the bodies of persons who have been killed by the

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vessels of this class of poisons, swell greatly, & soon become gangrenous and
 covered with livid spots. On dissection the veins are found congested,
 while the arteries are empty. Gangrenous erosions and perforations are
 sometimes found in the stomach. As a general rule, however, it is to be
 remembered that nothing can be gained from appearances, for the charac-
 teristic local effect can be perceived on dissection.* But it will at the
 same time be borne in mind, that on examining the contents of the stomach
 and alimentary canal, we shall sometimes succeed in finding portions
 of the substance which may have been taken into them, and which may
 have remained undigested, as the leaves, roots, or the form of a pill, and
 it behooves every medical man to be well acquainted with the external
 appearance, as well as the smell &c. of vegetables which occupy a
 conspicuous rank in the Materia Medica, for on this sort of knowledge
 shall will generally depend the accuracy of his evidence in these
 cases, in a court of justice.

Toxicotic Poisons.

Those which are included under the class of Toxicotic Poisons

* *Malin Toxicologic Medicinar* p. 46. & *Blasé's Medical Jurisprudence* p. 98.

† *Id.* — and *Bureau's* *Reinburg New Dispensatory*.

‡ *Nichol's Toxicology* p. 61. A very interesting and valuable paper will

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are also very numerous, consequently it will be impossible to enter upon them all individually in this place. Among them the following are the principal Poisonous Laminiferous. Viola.—This is perhaps more frequently employed for the destruction of human life, than all the other poisonous articles of this class together. Its action on different constitutions presents very various & labial use will always be borne in mind. In detecting it, we must be guided by the symptoms &c. to be mentioned when we come to treat of this class of ^{poison} interesting cases of poisoning by it are recorded.*

Sassafras. Common Sassafras.—The deleterious properties of this plant, depend upon the presence of Crocinic acid, of which, the distilled water contains a considerable quantity. In a concentrated state, the crocinic acid is transparent, colourless, and of an acid bitter taste; its smell is pleasant, resembling peach blossoms or bitter almonds. When poured on a plain surface, it spontaneously crystallizes; this, however,

is found in the New England Herb Journal for April 1817, by Dr J. R. Beck, entitled Observations on the Poisons of Sassafras by Virol. p. 122.

* London Medical Repository for 1805, and in the Edinburgh Medical & Surgical Journal for April 1821, p. 226, there is a case related by a Mr. Richardson, which was cured by searaction.

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is not the form in which it is employed except with great dilution. We shall consider it here only as a compound part of Laurel water. Taken internally, it is said to produce violent convulsions, and a mode of death similar to that of *Philopoy*.^{*} A Capt. Brumell was tried and executed at Ipswich in 1781, on suspicion of having poisoned a relative by Laurel water (*Guaiacum officinale*; *Scuta* & *Heulock*). This plant is very much employed as a valuable article of the Materia Medica. It has been taken into the stomach through mistake, as in the case of the soldiers mentioned by Sydenham, who ate soup which contained this plant. There is also a case of accidental poisoning by *Scuta* recorded by Dr. Hagerlin in the New England Medical Journal for July 1818. I know of no instance wherein it has been given criminally.

Satura Stramonium.^{*} *Thera* Apple & *Salem* town loc. cit. Instances wherein persons have been poisoned by this plant are by no means infrequent. Introduced into the stomach in a large dose, it produces thirst, swelling, tremors, delirium, mania, which is said to be of a very singular character, being attended with the most antique gesticulations.

^{*} Cases of poisoning by this article will be found in the Edinburgh Medical & Surgical Journal for Jan'y 1817, and Jan'y 1825.

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foreswearing, laughing, crying and distorting the face continually. Complete insensibility, superfluency, the extremities are cold, and respiration is hurried. "A deep coma comes on before death."

The following articles of this class need only be mentioned here, after which we shall proceed to enumerate in a very general way, their symptoms, treatment, &c.

Laurus Camphora. — Camphor.

Atropa Belladonna. — Deadly Night Shade.

Nicotiana Tobacco. — Tobacco.

Digitalis Purpurea. — Fox Glove.

Aspidium Nigrum. — Hellebore.

Solanum Dulcamara. — Woody Night Shade.

Morcheus Amy Opuntia. — Green Fig.

Of poisoning by the latter article, several cases have lately been recorded in the *Medical Journals of Europe*. — In a case of attempted suicide, recorded by Dr. Fischer of Paris,* there was a complete state of tetanus with violent convulsive movements. — Another case is also recorded in the same work by Dr. Muri of Gt. —

Here together with the whole family of *Fungi* & *Mushrooms* upon which it is not necessary to dwell particularly, have been taken

* London Medical Repository Vol. 14. 4th June 1833.

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Symptoms. —

The following are the general effects of the dose of Aristol's Prisms when taken into the stomach; introduced into the circulation by a course, or administered in form of a elycter, they are surpassed by Opium & the most are denuded in their effects. — A nausea, a great desire to vomit, excessive thirst, with dryness of mouth and fauces, and a sense of constriction in the pharynx; — giddiness, or a species of intoxication, with a dull, heavy pain in the head; occasionally, there is pain and a sense of weight at the pit of the stomach; great anxiety and violent agitation of the muscles of the face; rigidity of the limbs; the skin is sometimes hot, when a perspiration comes on and leaves it cold. As the effects go on, among others, convulsive dilatation of the pupils, stupor and delirium come on; the breathing becomes anxious and laborious; the pulse which was strong now becomes weak and scarcely perceptible, finally a deep coma succeeds, which shortly ends in death. —

Treatment.

As much as possible the same effects are to be attained, the same

* System of Toxicology. p. 256. —

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course of treatment is to be pursued in this as in the former stage. Should the stage of decomposition (peculiar to this stage) remain the same after these means have been employed, topical bleeding by cups or from the jugular vein should be tried, aided by blisters to the head and extremities, together with warm stimulating pictures. What we before said of the *Exsultans* condition is applicable in this place; it will be recollected that it must be in as recent a state as possible.

Digestion.

The appearances in digestion will be found to be similar to those presented in the former stage. We shall have to rely chiefly upon our knowledge of the various articles of the Materia Medica, in case any part of the food should be discovered in the stomach or alimentary canal, to enable us to form a correct opinion and not upon any particular appearance left on the body after death.

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Mineral Poisons

It will only be requisite for us to enter into the consideration of every part of the articles of this class of poisons. Those which have been most frequently employed for criminal purposes, and consequently those which are the most important, will be particularly mentioned. We shall commence with the consideration of Mercury and its preparations.

Mercury

The most active preparations of this metal are the Nitricized or Red precipitate, the Sulphuret or Mercuillon, and the oxy-muriate or corrosive sublimate. It is, however to the latter of these that our observations will be principally directed. Taken in a small quantity, as from two to four grains, its deleterious effects on the system are well known. It is used in practice as a valuable remedy for this case, and by long continued use, the system may be made to bear very large quantities of it. ⁸ It is a corrosive or sclerotic poison, acting powerfully on the

⁸ I have in Constantinople known by the name of Salgaman Beyen, or Salgaman, the token of Corrosive sublimate; having early in life habituated himself to the use of opium, finding that its effects were neither pleasant nor permanent, the use of corrosive sublimate as a substitute. For thirty years

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slimate texture of the Stomach. It would seem from actual experiment that this article is not equally poisonous to all animals, for instance the horse can bear a very large quantity with impunity as also several other animals.

Symptoms.

When taken into the Stomach it almost immediately produces anxiety, palpitation, nausea, violent vomiting of a frothy, mucous tinged with blood, and frequent bloody stools; burning heat in the mouth, throat & Stomach, with intolerable thirst and difficult deglutition; exsiccating, pain at the umbilicus cordis and umbilicus, swelling and painful tenderness of the abdomen, which is increased on pressure; swelling of the face, contracted & dilated pupils and parched lips, with a styptic metallic taste and sometimes profuse salivation. The pulse is at first small, tremulous, and quick; respiration becomes anxious, hurried and laborious; the secretion of urine is diminished, and sometimes complete strangury is produced. These symptoms are succeeded by aphonia, cold sweats,

he continues to live, and when arrived at discharge of nearly one hundred grains his system has become so habituated to it that the quantity he could now bear, "exceeded a drachm."

* In the Experiments of Judge Cooper and Dr. Saunders, in Cooper's Medical Jurisprudence, p. 445.

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Spasmodic contractions of the muscles, paralytic, convulsive, fainting, tremor, mania, convulsions, insensibility and death.

Treatment

Belong to a person who is supposed to have taken corrosive sublimate, we must endeavor to promote vomiting by the administration of very large quantities of diluent drinks, as pepl, milk, gum arabic water, barley water; gentle &c. Since the experiments of M. B. & the antidotal power of albumen have been fully established by repeated trials.* Consequently, we should at the same time give the whites of eggs in large quantities beat up with water. Should we fail by these means, and inflammatory symptoms require it, the antiphlogistic measures must be employed.

Infection

The brain, stomach, alimentary canal and liver will be found highly inflamed. The coats of the stomach and bowels are sometimes found to be covered with gangrenous spots, highly inflamed and abraded. The uterus in females is also generally in an inflamed state. In the

* London Medical Repository for June 1810, p. 485. - Edinburgh Medical and Surgical Journal for Oct. 1818, p. 174. - London Med. & Phys. Journal for June 1821, p. 498. Transactions of the College of Physicians in London, vol. 3, 1820.

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dissection of a case reported by Dr. Valentini,* the texture of the stomach was found totally destroyed, through all the coats for two and a half inches in diameter; and on washing off the intestines, or parts, only the peritoneal covering was left. The appearance was compared to a piece of leather burnt with a red hot coal.

Tests.

Where none of the poison can be found, and as vomiting is generally excited by it, we must procure the matter thrown up, or if the poison be past, the matter contained in the stomach and alimentary canal, must be obtained, and it is to this our tests must be applied.

From its watery solution, corrosive sublimate is precipitated white by ammoniac, deep orange yellow by lime water, red orange by the carbonate of soda and potash, dark brown by the nitrate of tin, and of a blackish grey by pure potash. These precipitates when rubbed on a bright plate of copper have a white or silvery coat on it.

Blanched mixed with cold water, when added to its solution, produces a copious precipitate of a white flocculent appearance; a little gives the solution a dark green colour, and a large quantity, red. The solution when dropped on clean copper and silver, will communicate a silvery

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lustre, dropped on litmus paper, a red colour will be produced. Polished plates dipped in it is instantly tarnished, and receives a dull, rusty colour. I shall proceed to mention the plan laid down by M^r Smith, for obtaining mercury in the metallic state from the matter vomited up. "The fluid part of the substance rejected, being filtered, we are to apply the laws to the product of this operation, and the solid parts being well macerated in distilled water, we are to treat them in the same manner, and are recommended by Copley where we do not obtain the precipitate in the way described, when they do not correspond in colour, or are altogether withheld, to mix ~~the~~ the fluid with caustic potash (in solution) and evaporate in a capsule to dryness; after which, detaching the residue, it should be heated to redness in a small retort with a balloon adapted to it. If metallic mercury be then obtained in the neck of the retort, the experiment will succeed perfectly. This is a process which cannot be entered upon during the emergency of the case, but we must observe the precautions necessary to insure its success, paragraph."

The application of Galvanism has been recommended by electricity for the solution of arsenious sublimates. It exhibits it in the metallic state—

Arsenic

The preparation of this metal, which has most commonly been employed for criminal purposes, is the white oxide or arsenious acid.

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There are, however, other preparations of it whose effects on the animal system are extremely deleterious, but of which it is unnecessary to treat particularly.

In its metallic state, arsenic I believe has no other employment for this purpose, and is of any use in the arts; nevertheless, it is necessary we should be well acquainted with its external appearances, as we shall in all cases of suspected poisoning by it, have to obtain it in the metallic state, without which our evidence will be considered incomplete. It is of a steel blue color, brittle, and when broken has considerable lustre, but which is lost on exposure to moist air, when it becomes encrusted with a gray powder. It burns with a blue flame on being heated in the air, and emits white fumes which have the smell of garlic.

Arsenic acid has been taken three mistakes, but this is rare, for it generally happens that it is intentionally taken. The same symptoms & effects are said to be produced by its external application, and instances are related where it has destroyed life by being applied to the skin.

Symptoms

Arsenic taken into the system produces hiccup, nausea, slight chilliness, insensibility to taste, in the mouth & throat great heat, constriction of the pharynx and oesophagus as the effects continue the symptoms become more alarming,

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anxiety, palpitation, oppression in the breast, violent pains in the stomach & bowels, accompanied with violent vomiting and painful diarrhoea. The matters discharged are generally of a dark brown or black colour, mixed with blood; the secretion of urine is diminished and bloody; the pulse is generally frequent and irregular; there is a pallor of countenance, indistinctness of vision going; and a white circle is formed around the eyes. Inaguarable thirst, the body is sometimes hot and sometimes cold, it becomes livid and covered with livid spots; the hair comes out, and the epidermis is detached. Cold sweats succeeded by spasms of the extremities, paralysis, tremor, numbness of the hands and feet, great prostration of strength, syncope, delirium, convulsions and death.

It will be recollected, however, that these are not uniformly the symptoms produced by arsenic: In some instances, persons have only experienced slight nausea and fainting, succeeded by death. Others, only vomiting & purging. It is therefore somewhat difficult to be distinguished from other poisons. For this reason, generally, procure several of the above symptoms, but we are never apt to find them all in the same case, although have been observed.

Treatment.

It is recommended in these cases to administer to promote vomiting by the exhibition of an emetic of sulphate of zinc, or of ipecacuanha, assisted by drinking

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large quantities of sweetened water, decoctions of linseed, mallows, or other such
 diet drinks. Limes water with sugar or chalk and water have been highly
 recommended to be drunk freely where the arsenic has been taken. Botani-
 calk according to Montuori, has a peculiar efficacy in displacing arsenic. —

Numerous articles have been recommended as antidotes to arsenic,
 as honey, sulphur, charcoal, vegetable decoctions &c, according to Sympson, however
 they ought not to be used, because they are not only useless but often injurious.
 We are not to neglect the general treatment, for this purpose, blisters, bleeding,
 local and general, emaculations with frequent emollient glysters
 must be had recourse to. When the symptoms have subsided the
 patient should take he put upon a light nutritious diet, as chicken broth,
 yeast &c. solid food must not be given. —

Infection

The bodies of those who have been destroyed by arsenic, are sometimes covered
 with a coarse white spots, as is the case with those who have been destroyed by

* I find by the London Med. Repository for 1800-1801, that the juice of the pome-
 granate is recommended by Dr. Cullen in a paper read before the Society of
 Physicians, as the best antidote known for arsenic. "It was tried upon various ani-
 mals in the best British antivenereal hospital." —

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digestible, viscid. The appearances presented on dissection vary in different cases. The stomach and intestines are generally found inflamed, abraded and congested; liver spots are sometimes found on the lungs, and the vessels of the brain are filled with blood. The inflammation is said to be the greatest in the stomach and rectum, and not infrequently ulceration and mortification of the rectum and fundus will be perceived, the latter is said to be peculiarly peculiar to arsenic. A remarkable glairy mucus is said to be secreted by the mucous coat of the stomach, to which, if the poison has been taken in the solid form, small pieces will be found adhering.

Tests.

When arsenious acid is combined with an alkali as the carbonate of Potash, Salts of Copper produces a precipitate of a striking color, being that of Schweizer's green; should there be in arsenic in the liquor and a ferrous alkali has been employed, the precipitate, instead of being a green, will be of a salutary blue. Ammoniacal Nitrate of Silver produces a beautiful yellow precipitate, which becomes black on exposure, this is a very delicate test, by it 1/100 of a grain may be detected, not only recognized in 7/11 of water. Added to a solution of arsenic acid, Lime water produces a white, Salts of Ammoniacal Copper's green, and Hydrogenation by oxygen an orange yellow precipitate. Arsenious acid when dissolved in albumen or gelatin is precipitated by the tests, nearly the same as

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from the aqueous solution. Having thus prepared their precipitates, it will now become necessary to produce the metal, and having accomplished this, our business will be concluded.

To produce arsenious acid to the metallic state, mix a portion of the suspected powder with three times its weight of Black flux (consisting of finely powdered Asarol, one part, dry carbonate of potash, two parts), put the mixture into a glass tube, hermetically closed at one end, about eight inches in length, and one fourth of an inch in its diameter; should any of the powder adhere to the sides of the tube, it must be carefully brushed off with a feather, so that the inner surface of its open part may be perfectly clean and dry; the closed end of the tube, by way of security, may be thinly coated with a mixture of trip clay and sand, but this operation is not absolutely necessary; the open extremity of it to be loosely plugged with a piece of paper; the entire one must be annealed on a clapping kiln of pure hot coals, when the arsenic, if present, will sublime; and be found shining with a brilliant metallic lustre; the upper part of the tube, a portion of this arsenical metal, if it be arsenic, will, when laid on heated ^{iron} plates is dense fumes, which are characterized by a strong smell of garlic.* & Berz has ascertained that the arsenious or garlic-like smell is wholly confined to metallic arsenic in a state of vapour, and that even the

* Paris' Pharmacopoeia, p. 211. — * Journal of Science for 1819, vol. 1, p. 241.

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venical vapour be re-oxidised by the presence of some body which has a powerful affinity for hydrogen: it is perfectly inodorous, hence when arsenious acid is thrown on charcoal or metallic bodies in a state of ignition, such a decomposition takes place, and the peculiar smell is evolved. Thus it will be of importance not to overlook, for by subjecting it to a piece of copper to the heat of a spirit lamp, the acid is decomposed before sufficient heat is obtained, and consequently no odour is perceptible.

The preparations of Antimony, lead, copper, tin, zinc &c. produce symptoms, nearly resembling those of the class of corrosive poisons. I do not recollect to have heard of a case where either of them had been employed for criminal purposes, although several of them have been taken through mistake, and have produced fatal effects. Not conceiving it necessary to dwell particularly on any of them, I shall proceed to notice in a summary manner the Mineral Acids.

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Mineral Acids.

When internally the sulphuric, nitric & hydrochloric acids produce nearly the same symptoms, (as also the oxalic acid,) a burning heat in the mouth, excruciating pain in the throat and stomach, hoarseness, profuse thirst, vomiting of a yellow mucus mixed with blood, diarrhoea with numerous bloody stools and dyspnoea. The breathing becomes difficult, pulse irregular, the face cold, stretched, convulsions, convulsions and death.

Treatment.

Large quantities of dilute sulphuric acid should be drunk, or mix an ounce of calcined magnesia with a quart of water, of which give a tumbler full every few minutes. Endeavour to procure vomiting by tickling the fauces. If oxalic acid has been taken, alkali and water must be given in proper dose. When the poison is evacuated, give stimulant drinks, as punch, with or without small injections of the same. Inflammation symptoms are to be treated on general principles. Water alone should never be given when sulphuric acid has been taken, as it will heat is generated by the mixture."

Injection.

The lining membrane of the mouth & oesophagus change colour; the teeth are loose; the throat is closed and its texture sometimes completely destroyed, as when the nitric acid has been in contact. Nitric acid stains every part which it touches of a yellow colour.

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Salts.

Sulphuric acid. After has been taken, it is known by producing great heat when mixed with water, no fumes are emitted. By adding to it Strontas a sulphate, insol. in Nitric and muriatic acids and water, will be formed. Chalk or potash will produce an effervescence.

Nitric acid. A little of silver added to it produces a very white flaky precipitate of minute of silver, which is soluble in ammoniac and a dark coloured one by the addition of mercury. It emits pungent fumes.

Nitric acid changes the skin of a yellow hue: when copper is added to it orange colour appears and is emitted and it is changed blue - A nitrate is formed by the addition of wood, which inflames when exposed to burning coals.

Lime acid. Lime and all its salts are precipitated by this acid, hence, lime water is a test, it produces a milky precipitate. Sulphuric acid decomposes it. It is volatilized by heat.

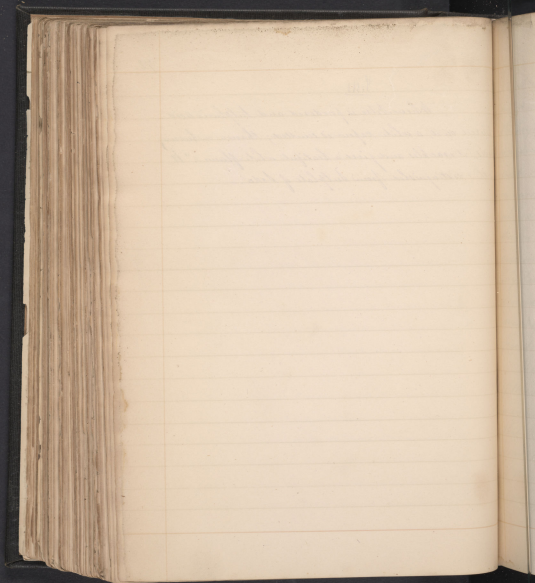
If the Phosphoric, the tartaric acids be one shall say nothing - In a former chapter under the head of limest water, we allude to the Phosphoric acid.

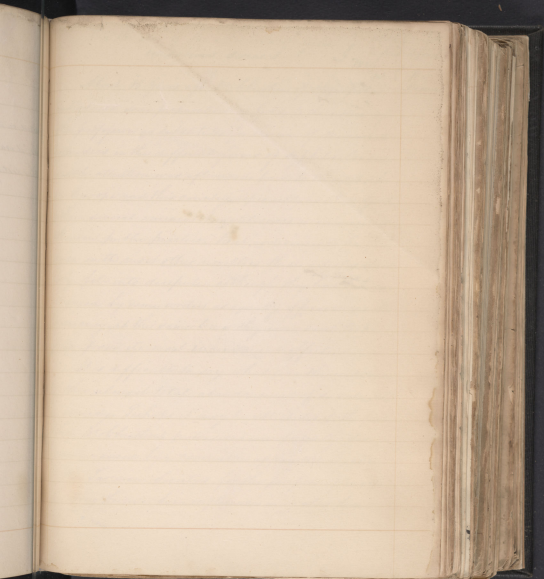
All alkalis and their earths are also very violent poisons, when taken in the system. Nitric or Nitro blue, has not properly been taken these mistakes from its resemblance to Hinder's salt. The symptoms and treatment mentioned respecting arsenic is nearly applicable in this case, with the exception, that lime water is not proper here.

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Soda

When this is powdered and Sulphuric Acid poured on it, a white vapour is emitted; thrown on burning coals, "it crackles and gives a beautiful white flame." It is thus distinguished from Sulphate of Soda.





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